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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/809,419

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EXAMINER

GOUDREAU, GEORGE A

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/809,419	Applicant(s) KOIKE, KESAHIRO	
	Examiner George A. Goudreau	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-24 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. This action will not be made final due to the new grounds of rejection.
2. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-5, and 7-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardinale (6,015,640) further in view of Hata et. al. (JP 63-114,866) and Takeuchi et. al. (2002/0,179,576).

Cardinale discloses a process for fabricating a EUV blank from glass, which is then used in the photolithographic patterning of a wafer. The EUV blank is fabricated using the following steps:

-A polished (i.e.-flattened) quartz substrate (i.e.-blank) is produced; and

-Alternating layers of Mo and Si are deposited onto the flat surface of the quartz blank. The Mo/Si layers on the quartz blank may be patterned using either a lift off process or etching process.

This is discussed specifically in column 1; and discussed in general in columns 1-6. This is shown in figures 1-7. Cardinale fail, however, to specifically disclose the following aspects of applicant's claimed invention:

- the specific usage of the process which is claimed by the applicant for polishing (i.e.-flattening) the top surface of the glass blank; and
- the production of a EUV glass blank with the specific level of smoothness, which is claimed by the applicant

It would have been obvious to one skilled in the art to employ the specific means which claimed by the applicant for polishing (i.e.-flattening) the EUV glass blank in the process which is taught above based upon the following. This simply provides an alternative and at least equivalent means for polishing (i.e.-flattening) the EUV glass blank in the process, which is taught above to the specific means, which are taught above. Further, Hata et. al. and Takeuchi et. al. teaches methods for desirably polishing (i.e.-flattening) a glass blank. (i.e.-See below.)

(Hata et. al. discloses a process for preparing a glass mask blank which is comprised of the following steps:

- The glass substrate is first mechanically ground to improve its flatness.;
- The glass substrate is then wet etched in order to remove a damaged layer from the surface of the glass substrate. (The glass is wet etched with an acid if

silicate glass is used. The glass is alternatively wet etched with an alkali if phosphate group glass is used.); and

-The surface of the wet etched glass is then cmp polished to optically smooth the glass surface.

This is discussed specifically in the abstract; and discussed in general on pages 457-461. Hata et. al. fail to disclose, however, the following aspects of applicant's claimed invention:

-the specific usage of a plasma etching process to locally machine the surface of a glass substrate in order to increase the degree of flatness of the glass substrate based upon a profile measuring step; and

-the specific usage of the specific acids, and alkali wet etchants, which are claimed by the applicant to wet etch the surface of the glass blank in order to remove damage from the surface of the glass blank

Takeuchi et. al. teach that it is desirable to locally machine the surface of a glass substrate to remove peaks, and valleys in the surface of the glass substrate using a plasma etching process based upon a profile measuring step. This is discussed specifically in the abstract; and discussed in general on pages 1-3.

It would have been obvious to one skilled in the art to employ the flatness controlling means of Takeuchi et. al. to machine the surface of the glass blank in Hata et. al. based upon the following. This simply represents the usage of an alternative, and at least equivalent means for machining the surface of the glass blank to the specific means which are taught by Hata et. al. Further, Takeuchi et. al. teaches

that it is desirable to use their means for locally machining the surface of a glass substrate in order to improve the flatness of the glass substrate.

It would have been obvious to one skilled in the art to employ the specific acidic wet etchants, and alkaline wet etchants which are claimed by the applicant to wet etch the damaged surface layer of the glass substrate in the process which is taught above based upon the following. The specific acidic wet etchants, and alkaline wet etchants, which are claimed by the applicant, are conventionally used or at least well known for the wet etching of glass. (The examiner takes official notice in this regard.) Further, the specific usage of the specific wet etchants which are claimed by the applicant for wet etching the glass substrate which is taught by Hata et. al. simply represents the usage of an alternative, and at least equivalent means for wet etching the glass substrate to the specific means which are taught by Hata et. al.)

It would have been obvious to one skilled in the art to produce a EUV glass blank with the specific level of smoothness, which is claimed by the applicant based upon the following. It would have been desirable to provide a EUV glass blank with the desired optical properties by providing the top surface of the glass blank with an adequate level of smoothness to achieve those optical properties.

6. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 1792

7. Any inquiry concerning this communication should be directed to examiner George A. Goudreau at telephone number 571-272-1434.

/George A. Goudreau/
Primary Examiner, Art Unit 1792